

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

- 1 1. (Currently Amended) A system for a transmitter comprising:
 - 2 a plurality of antennas to define a respective plurality of fixed beams which together
 - 3 cover a coverage area;
 - 4 for each antenna, a respective signal generator to generate a respective signal comprising
 - 5 a common overhead component common to all the signals, using a spreading code common to all
 - 6 the signal generators;
 - 7 transceiver circuitry ~~connecting~~ coupling the signal generators to the antennas such that a
 - 8 respective one of the signals is transmitted by each corresponding antenna, the signals to be
 - 9 transmitted substantially simultaneously;
 - 10 for each pair of said antennas having overlapping beams within said coverage area, the
 - 11 respective pair of signal generators to use the spreading code with a mutual micro-timing offset
 - 12 that is large enough that destructive cancellation substantially does not occur between the
 - 13 common overhead components transmitted on the overlapping beams, wherein a first spreading
 - 14 code used to generate a signal by a first of the pair of signal generators is offset by the mutual
 - 15 micro-timing from a second spreading code used to generate a signal by a second of the pair of
 - 16 signal generators.
- 1 2. (Currently Amended) A system according to claim 1, implemented for a plurality of coverage
2 areas, each coverage area being a respective sector served by a base station, wherein the plurality
3 of fixed beams together cover a corresponding one of the sectors, and wherein the sectors are
4 associated with respective different spreading codes.
- 1 3. (Original) A system according to claim 1 wherein the transmitter is a CDMA base station, and
2 each signal is a CDMA signal.
- 1 4. (Original) A system according to claim 2 wherein the transmitter is a CDMA base station, and
2 each signal is a CDMA signal.

1 5. (Previously Presented) A system according to claim 1, wherein the coverage area is a cell
2 sector, wherein the respective mutual micro-timing offset is less than a predefined maximum
3 value such that the mutual micro-timing offset does not cause a source of one of the signals to be
4 incorrectly identified as located in another cell sector.

1 6. (Previously Presented) A system according to claim 5 wherein:
2 the sector has a sector-specific spreading code, and wherein the respective mutual micro-
3 timing offset between each pair of signals is realized by applying the sector-specific spreading
4 code with a respective mutual micro-timing offset.

1 7. (Original) A system according to claim 6 wherein the sector-specific spreading code is a PN
2 code.

1 8. (Previously Presented) A system according to claim 7 wherein each mutual micro-timing
2 offset is at least one chip and less than eight chips.

1 9. (Previously Presented) A system according to claim 7 wherein each mutual micro-timing
2 offset is less than half a width of a traffic search window implemented in a mobile terminal
3 communicating with the transmitter.

1 10. (Previously Presented) A system according to claim 6 wherein the sector-specific spreading
2 code is a short code having a sector specific offset used to distinguish between other sources
3 using the same short code, and wherein the respective mutual micro-timing offset is small
4 enough that substantially no ambiguity between different sector specific offsets occurs at a
5 receiver in respect of any pair of signals transmitted by adjacent antennas.

1 11. (Original) A system according to claim 10 wherein the short code is of length $2^{15}-1$.

1 12. (Original) A system according to claim 4 wherein: the sector has a sector-specific spreading
2 code, and wherein the respective mutual micro-timing offset between each pair of CDMA signals

3 is realized by applying the sector-specific spreading code and then applying a mutual micro-
4 timing offset.

1 13. (Original) A system according to claim 4 wherein:
2 the sector has a sector-specific spreading code, and wherein the respective mutual micro-
3 timing offset between each pair of CDMA signals is realized by applying the micro-timing offset
4 to respective sector-specific spreading code generators.

1 14. (Original) A system according to claim 12 wherein the sector-specific spreading code is a PN
2 code.

1 15. (Previously Presented) A system according to claim 1 wherein the common overhead
2 component comprises at least one of pilot channel, sync channel, paging channel, quick paging,
3 advanced access channel and auxiliary pilot.

1 16. (Original) A system according to claim 4 further comprising:
2 for each active user located within the sector, at a given instant only one of the CDMA
3 signals includes a user-specific traffic component generated by the respective CDMA signal
4 generator.

1 17. (Previously Presented) A system according to claim 16 wherein the one of the CDMA
2 signals to include the user-specific traffic component for a given user is identified by analyzing
3 signal strength on reverse links from the user, and selecting the CDMA signal corresponding
4 with the reverse link having a best signal strength.

1 18. (Original) A system according to claim 1 wherein the transceiver circuitry is further adapted
2 to provide transmit frequencies in a manner such that the transmit frequencies include a
3 frequency offset from one another.

1 19. (Previously Presented) A system according to claim 18 comprising a beam-forming matrix
2 connected to the plurality of antennas.

1 20. (Original) A system according to claim 19 wherein the beam-forming matrix is a Butler
2 matrix.

1 21. (Previously Presented) A system according to claim 18 wherein the frequency offset is
2 chosen to further reduce undesirable effects of signal cancellation.

1 22. (Original) A system according to claim 18 wherein the signals have unique traffic channels.

1 23. (Previously Presented) A system according to claim 22 wherein the frequency offset is a
2 multiple other than that of a frame rate.

1 24. (Original) A system according to claim 18 wherein the frequency offset is greater than 30 Hz
2 and less than 120 Hz.

1 25. (Previously Presented) A system according to claim 1 further comprising:
2 means in the transceiver circuitry for providing transmit phases that include a time
3 dependent phase offset from one another, wherein the phase offset is chosen to reduce
4 undesirable effects of signal cancellation.

1 26. (Currently Amended) A method in an antenna system comprising:

2 transmitting, from antennas of the antenna system, signals each having a common
3 overhead component on a plurality of beams within a sector, with a micro-timing offset of a
4 spreading code used by the signals transmitted on adjacent overlapping beams, wherein the
5 micro-timing offset is large enough that destructive cancellation substantially does not occur
6 between common overhead components on the adjacent overlapping beams, wherein a first
7 spreading code used to generate a signal on a first of the overlapping beams is offset by the
8 micro-timing offset from a second spreading code used to generate a signal on a second of the
9 overlapping beams,

10 wherein the plurality of beams are transmitted in the sector that is from among plural
11 sectors of a cell.

1 27. (Previously Presented) A method according to claim 26 wherein the sector has a sector-
2 specific spreading code, and wherein the respective micro-timing offset between each pair of
3 signals is realized by applying the sector-specific spreading code with a respective mutual micro-
4 timing offset.

1 28. (Previously Presented) A system according to claim 1, wherein the plurality of fixed beams
2 defined by the corresponding plurality of antennas together cover a sector from among plural
3 sectors of a cell.

1 29. (Previously Presented) A method according to claim 26, wherein the micro-timing offset is
2 less than a predefined maximum value such that the micro-timing offset does not cause a source
3 of one of the signals to be incorrectly identified as located in another sector.

1 30. (New) A system according to claim 1, wherein the first spreading code is the spreading code
2 common to all the signal generators, and the second spreading code is offset from the first
3 spreading code by the mutual micro-timing offset.

- 1 31. (New) A method according to claim 26, wherein the first spreading code is the spreading
- 2 code of the sector, and the second spreading code is offset from the first spreading code by the
- 3 micro-timing offset.